A STUDY OF SCIENTIFIC ATTITUDE AND ACADEMIC ACHIEVEMENT IN SCIENCE OF SECONDARY SCHOOL STUDENTS IN THANE CITY

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I. INRODUCTION

Today we are living in the world of science. Science is a system of acquiring knowledge based on scientific process or method in order to organize body of knowledge gained through research. In today's scenario most of the students are choosing science as a major subject because of its scope. But it is very difficult to say that whether they have scientific attitude or not. In this Research researcher tried to find out the scientific attitude and significant difference in scientific attitude of the different Board students. Teachers and people predict that the students who have major scientific attitude will score more marks in science subject test i.e. his academic achievements in science will be higher. The willingness to collect and use evidence, willingness to change ideas in the light of evidence, willingness to review procedure is the indicators of scientific attitude. The science teacher is perhaps mainly responsible for developing scientific attitudes amongst the students and can help the students to score higher academic achievements. Thus we can say that scientific attitude and academic achievement in science are inter related with each other.

II. Need and Importance of the study

In recent year it seems that importance of science has declined in the past couple of years. However its necessity in growing the economy and finding new solution to old problems and dilemmas remain the same. However history is now entering the period where great discoveries mostly cannot be made without some sort of financial backing for the equipment and research time. This means that there is real chance for major nations losing ground in the sciences if they do not make the consistent effort to invest in research and development. U.S President Obama made a point in saying that innovation was the key to "winning the future" and that is why without science, innovation is nothing. So what are areas where science is important? The first is in every day human life. Thanks to advances in the biomedical field there are fewer infections or diseases than never before. Some illness that would be death sentence even just 20 years ago with advanced research into the study of bacteria viruses are now becoming manageable and in some cases have even been eradicated. People are living longer as we understand more about aging and the nutrients need to keep the body healthy and active long into our sunset years. The benefits of science teaching are clear if the children had and established concept of how to present and test their ideas independently and to evaluate material put in front of them, as well as having something to take outside the class room for the future. Scientific attitude includes observant, curious, systematic, honest, open-minded, persistent, creative, does not jump to conclusions, with critical thinking. As researcher observes that not all the science students have scientific attitude because they don't have favourable attitude towards science, so they do not achieve the goal also. Therefore the

researcher is curious to know the relation between the scientific attitude and academic achievement in science of school students. This made the researcher to conduct the study.

OBJECTIVE OF THE STUDY:

a) To find out the scientific attitude of secondary school students in Thane city.
b) To ascertain the scores of academic achievements in science of secondary school students in Thane city.
c) To find out the relation between scientific attitude and academic achievement in science of secondary school students in Thane city.

RESEARCH QUESTION:

In pursuit of objective a, b and c the following Research Questions were raised.
i) Is there any difference in the scientific attitudes of boys and girls of high school students of Thane city?
ii) Is there any difference in science achievement of boys and girls of high school students in Thane city?
iii) What is the relation between scientific attitude and science achievement of high school students in Thane city?

HYPOTHESIS

In pursuit of objective a, b, and c the following hypothesis are formulated.
(i) There is no significant difference in scientific attitude of boys and girls of secondary school students in Thane city.
(ii) There is no significant difference in academic achievement of boys and girls of Secondary School Students in Thane city.
(iii) There is no correlation between the scientific attitude and academic achievements of boys and girls of Secondary School Students in Thane city.

OPERATIONAL DEFINITIONS OF VARIABLES

- **Scientific Attitude**

Open mindedness, a desire for accurate knowledge, confidence in procedure for seeking knowledge and the expectation that the solution of the problem will come through the use of verified knowledge is known as 'Scientific Attitude'.

- **Scientific Achievement**

Scientific achievement of the students is the performance of the students in their examination as indicated by the score of the students in the academic year.

- **Secondary School Students**

Students studying in class IX and X are known as Secondary School Students.

III. RESEARCH METHODOLOGY

Research is common parlance refers to a search for knowledge one can also define research as a scientific and systematic search for pertinent information on a specific topic.
Researches' are of three types. They are 1.Descriptive Research 2. Historical Research
3. Experimental Research.
In the present study the Researcher used descriptive survey method and chose the sample through stratified Random technique. It is conducted in Thane city, Maharashtra in India. The sample comprises of 100 students (Girls 50, Boys 50) from 4 Secondary schools of Thane City, Maharashtra. The age ranged from 13-14 years for both boys & girls.

IV Tool

Scientific Attitude Scale (SAS) for assessment of measuring student's attitude towards science prepared by Dr. (Mrs.) Avinash Grewal (1990) was used. The Final results of students were recorded from schools for measuring academic achievement.

PROCEDURE

The investigator approached the various secondary schools for collecting data. She administered the tool and collected data. After collecting data she scored and treated this data statistical .She used the Mean, standard Deviation and 't' value and correlation coefficient.

V. Results, Analysis and Discussion

The data was analysed on the basis of academic achievement, scientific attitude and gender using descriptive statistics. The data was analysed to compare the means of boys & girls of secondary students for comparative study of scientific attitude of boys and girls of Secondary School students. Table 1 show that there is no significant difference between the scientific attitude of boys and girls of Secondary school students in Thane city.

Table 1: Significance of the Difference between Means of scientific attitude of boys and girls of secondary school students

Sample	Total no of Sample	Mean (M)	Standard Deviation (σ)	Standard Error (SEd)	Degree of Freedom	't' value	Level of Significance
Boys	50	52.3	7.51	1.319	98	1.138	.05
Girls	50	50.08	5.528				

Above Table depicts that the mean value of boys of secondary school is 52.3 and of girls is 50.8 and the S.D Value of boys is 7.51 and of girls is 5.528. The value of standard error is 1.319 and't' value is 1.138 which is significant at .05 level.

Table 2: Significance of the Difference between Means of Academic Achievement of Boys and Girls of Secondary schools in science

Sample	Total no of Sample	Mean (M)	Standard Deviation (σ)	Standard Error (SEd)	Degree of Freedom	't' value	Level of Significance
Boys	50	82.5	16.32	3.076	98	.16	0.05
Girls	50	82	14.39				

It is clear from the above table that the Mean Value of achievement scores of boys is 82.5 and the Mean Value of Girls is 82. The S.D Value of Girls and Boys is 16.32 and 14.39 respectively. From the Mean and the S.D Values of Boys researcher calculated the SEd and't' Value which is 3.076 and .16 respectively. The't' value is significant at 0.05 level of significance. So we can say that there is no significant difference in mean value of achievement scores of boys and girls of secondary school in science in Thane city.

Table 3: Descriptive Analysis of Correlation Co-efficient between Scientific Attitude Scale Scores and Scores of Achievement of Secondary School Students in Science

S. No	Value of Correlation co-efficient	Relationship
1.	0.16	Negligible

From the above table it is clear that the correlation coefficient between the scientific attitude and Academic achievement in Science of secondary school students is 0.16 which shows the negligible correlation between these two variables.

VI. Testing of Hypothesis

In descriptive analysis, data are described with the help of statistical measurements. Conclusive results are obtained by testing hypothesis formulated for the research and these are tested statistically with the help of statistical techniques. The researcher presented the testing of hypotheses in the following manner.

Hypothesis No. 1

There is no significant difference in scientific attitude of boys and girls of secondary school students in Thane city.

Table for testing Hypothesis No. 1

Sample Size	Degree of Freedom (df)	Calculated Value of 't'	Table value of 't'	Level of Significance
100	98	1.138	1.99	.05

It is clear from the above table that calculated value of 't' between the scientific attitude of boys and girls of high school students in Thane City is 1.138 which is slightly less that from the tabulated value of 't' at .05 level of significant. It means there is no significant difference between the Mean Value of these two groups.

So we can say that from this table it is concluded that there is no significant difference

between the scientific attitude of boys and girls of secondary school students in Thane city. So, Hypothesis No.1 is accepted.

Hypothesis No. 2

There is no significant difference in science achievement score of boys and girls of secondary school students in Thane city.

Table for testing Hypothesis No. 2

Sample Size	Degree of Freedom (df)	Calculated Value of 't'	Table value of 't'	Level of Significance
100	98	.06	1.99	.05

It is clear from the above table that the result is significant. So we can say that there is no significant difference in mean value of achievement scores of boys and girls of secondary of secondary school in Thane city. So hypothesis no 2 is also accepted.

Hypothesis No. 3

There is no correlation between the scientific attitude and science achievement of secondary school students in Thane city.

Table for testing Hypothesis 3

S.N	Correlation Co-efficient between Scientific Attitude and Scientific Achievement	Negligible
1	.06	Negligible

We can say from the above table that there is no correlation between scientific attitude and science achievement of secondary school students in Thane City. So hypothesis no.3 is also accepted.

VII. Findings and conclusions

The following conclusion can be drawn by testing of hypothesis.

- There is no significant difference between the scientific attitude of boys and girls of secondary school students in Thane city.
- There is no significant difference in mean value of a achievement scores of boys and girls of secondary schools in Thane city.
- There is no significant correlation between the scientific attitude scores and science achievement of secondary school students in Thane city.

Besides it by seeing the table of various norms of SAS and their interpretation in manual of scientific attitude scale researcher conclude that only 2% girls and 3% boys have extremely favorable scientific attitude where as 12% boys and decidedly favorable scientific attitude.

No one girl's student has decidedly favorable scientific attitude. 26% girls and 18% boys have fairly favorable scientific attitude and for somewhat favorable attitude the percentage of girls and boys was same i.e.28%, 34%girls and 24% boys have just favorable scientific attitude. For somewhat unfavorable scientific attitude and unfavorable scientific attitude the percentage of boys and girls was 8 and 2 respectively. It means that percentage of boys and girls was same only 2% boys have decidedly scientific attitude.

It concludes that,

- The percentage of boys is more than girls for extremely favorable and just favorable scientific attitude.
- For fairly favorable and just favorable scientific attitude the percentage of girls is more than the boys.
- For somewhat unfavorable and unfavorable scientific attitude the percentage of girls and boys students are same.

VIII. Limitation of the study

The study is limited to Thane City of Maharashtra in India; hence the results cannot be generalized. In a short span of time it is not possible to cover all the variables. Due to shortage or resources the study was limited to 6 Secondary Schools only.

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